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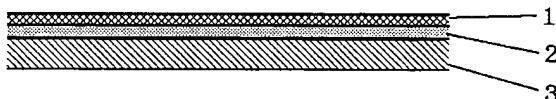
(54)【発明の名称】 靴底掃除シート

(57)【要約】

【目的】 靴底掃除の際にバリバリという耳障りな音が発生しにくくして消音効果に優れる靴底掃除シートを得ること。

【構成】 支持シート(3)上の片表面の全部又は一部に、弱粘着性物質による纖維の不織布状堆積層からなる弱粘着層(1)を有する靴底掃除シート。

【効果】 不織布状の弱粘着層によるクッション性に基づいて靴底の凹凸に良好に密着して掃除効果に優れると共に、消音効果に優れる。



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【特許請求の範囲】

【請求項1】 支持シート上の片表面の全部又は一部に、弱粘着性物質よりなる繊維の不織布状堆積層からなる弱粘着層を有することを特徴とする靴底掃除シート。

【請求項2】 不織布状堆積層からなる弱粘着層を固定用粘着層を介して支持シート上に接着してなる請求項1に記載の靴底掃除シート。

【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明は、消音効果に優れる靴底掃除シートに関する。

【0002】

【従来の技術】 従来、支持シート上に粘着層をペタ塗状態で設けてなる靴底掃除シートが知られていた。かかるシートは、その上に靴を着用したまま乗ることで靴底に付着したゴミや塵、埃等を粘着層側に移着させて靴底を掃除できるようにしたものである。

【0003】 しかしながら、従来のペタ塗粘着層型の靴底掃除シートにあっては、その上に乗って靴底を掃除する際に、バリバリという耳障りな音が発生して騒々しい問題点があった。

【0004】

【発明が解決しようとする課題】 本発明は、靴底掃除の際にバリバリという耳障りな音が発生しにくくして消音効果に優れる靴底掃除シートを得ることを課題とする。

【0005】

【課題を解決するための手段】 本発明は、支持シート上の片表面の全部又は一部に、弱粘着性物質よりなる繊維の不織布状堆積層からなる弱粘着層を有することを特徴とする靴底掃除シートを提供するものである。

【0006】

【作用】 本発明者らは、上記の課題を克服するために鋭意研究を重ねるなかで、従来の掃除シートにより靴底を掃除する際に発生するバリバリ音は、靴を粘着面より剥がす際の剥離音であることを究明し、従来のペタ塗状の粘着層に代えて、不織布状の弱粘着層とすることによりバリバリ音が抑制されて消音効果に優れることを見出した。

【0007】 前記において粘着層を介した移着掃除では、粘着面と靴底との剥離動作は不可避であることより不織布状の弱粘着層とすることで剥離音が高度に消音されたことは予想外のことであり、その消音機構は不明である。従来のペタ塗粘着層タイプで軟質の弱粘着層とした本発明者らの試みではバリバリ音の消音に充分な効果は発揮されないことより、粘着層を不織布状としたことに消音効果の源があるものと考えられる。

【0008】

【実施例】 本発明の靴底掃除シートは、支持シート上の片表面の全部又は一部に、弱粘着性物質よりなる繊維の不織布状堆積層からなる弱粘着層を有するものである。

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その例を図1、図2に示した。1が不織布状の弱粘着層、3が支持シートである。なお2は、不織布状の弱粘着層を支持シート上に強固に接着固定することを目的に必要に応じて設けられる固定用粘着層である。

【0009】 図1、図2の実施例より明らかのように、弱粘着性物質よりなる繊維の不織布状堆積層からなる弱粘着層は、支持シート上の片表面の全部に設けられてもよいし、当該片表面の一部に設けられてもよい。前記弱粘着層を支持シート上に部分的に設ける場合、その配置等については適宜に決定することができる。

【0010】 不織布状の弱粘着層の形成は、例えばメルトブロー方式やカーテンスプレ方式などの適宜な方式で弱粘着性物質を纖維化し、それを支持シート上に不織布状に堆積させて多孔状態の弱粘着層を形成する方法などの適宜な方法にて行うことができる。

【0011】 図3に前記のメルトブロー方式による方法を示した。この方法においては、チップ状や顆粒状等の通気可能な状態で弱粘着性物質4をダイス5に収容し、その弱粘着性物質をダイスを介し加熱して部分的に溶融させると共に、ダイスの上方より矢印の如く熱風を吹込むことにより弱粘着性物質の溶融分がダイス孔51より纖維状41で吹出され、それがコンペア6を介し順次移動する支持シート3の上に展開されて不織布状の堆積層からなる弱粘着層1が形成され、得られた靴底掃除シート7が巻取ロール8に巻取られる。なお支持シートの裏面は、剥離剤等により剥離性の付与処理がなされており、巻取り体の巻戻しが容易に行えるようになっている。

【0012】 弱粘着層の形成に用いる弱粘着性物質としては、例えばホットメルト型粘着剤の如く、常温で弱粘着性を示す適宜なものを用いる。一般には加熱溶融可能な熱可塑性エラストマーなどが用いられる。上記したメルトブロー方式やカーテンスプレ方式の如く、加熱溶融可能な弱粘着性物質を用いて加熱溶融下に纖維状に展開することで臭気が揮散して微臭性に優れるものとすることができる。

【0013】 好ましく用いられる弱粘着性物質の例としては、SIS、SBS、SEBS、SIPS、SEPSの如きスチレン系エラストマーや、ウレタン系エラストマーなどがあげられる。弱粘着性物質は、単独で又は2種以上をブレンドして用いることができ、弱粘着性物質の調製に際しては、必要に応じタッキファイバー、軟化剤、老化防止剤などの適宜な添加剤を配合することができる。

【0014】 掃除効果（接着力）と消音効果のバランス等の点より好ましい弱粘着層は、それを形成する繊維の平均纖維径が500μm以下、就中0.5~100μm、特に1~50μmであり、かかる平均纖維径の繊維が2000g/m²以下、就中1~100g/m²、特に2~5

0 g/m²の割合で不織布状に堆積したものである。なお前記の平均繊維径は、走査顕微鏡で不織布状の弱粘着層をランダムに写真を探り、その10枚の写真より任意な10点における繊維径を調べてそれらを平均して算出したものである。

【0015】弱粘着層と支持シートの間に必要に応じて介在させる固定用粘着層は、弱粘着層と支持シートとに對して良好な接着力を示す適宜なものを用いる。好ましくは、弱粘着層の形成に用いた弱粘着性物質にタッキファイヤーを併用して弱粘着層よりも大きい接着力としたものである。固定用粘着層は、ペタ塗状態に設けることもできる。なお弱粘着層の好ましい接着力は、ステンレス板に対する180度ピール値(剥離速度300mm/分)に基づき、1~1000g/20mm、就中2~500g/20mm、特に5~300g/20mmである。

【0016】靴底掃除シートの形成は、支持シート上に必要に応じ固定用粘着層を介して不織布状の弱粘着層を直接設ける方法のほか、例えばセパレータ上に不織布状の弱粘着層を形成してそれを支持シート上に必要に応じ固定用粘着層を介して移着する方法などの適宜な方法により行うことができる。

【0017】前記の支持シートとしては、特に限定はなく、従来と同様のものを用いることができる。従ってシートに加工できる適宜なものを用いることができる。好ましくは、ポリエチレン、ポリプロピレン、ポリエチレンとポリプロピレンのブレンド物等のポリオレフィンやポリ塩化ビニル等からなるシート、あるいはポリアミド繊維やポリエステル繊維等からなる不織布状ないしフェルト状のシートなどが用いられる。シートの厚さは、5mm以下、就中1mm以下、特に1~500μmが一般的であるが、これに限定されない。

【0018】本発明の靴底掃除シートは、そのシート形状のまま、あるいはマット等の上に配置して実用に供することができる。また靴底掃除シートを積層した状態で実用に供することもできる。

【0019】実施例1

裏面をシリコーン系剥離剤で処理した厚さ25μmの0*

*PPシート上の片面の全面に、スチレン系エラストマー(SIS)100部(重量部、以下同じ)と石油系樹脂100部の混合物からなる粘着剤溶液をペタ塗してなる厚さ15μmの固定用粘着層を設け、その上にSIS100部と石油系樹脂30部をニーダーにて160℃で混練してなる混練物をチップ化してダイスに入れメルトプロー方式により坪量10g/m²の不織布状の弱粘着層を形成して靴底掃除シートを得た。

【0020】なお前記においてメルトプローは、ダイス温度200℃、熱風温度210℃、熱風圧力1.0~2.0kg/cm²、コンベアによるライン速度3m/分の条件で行い、その不織布状の弱粘着層における平均繊維径は、約10μmであった。

【0021】実施例2

坪量30g/m²の不織布状の弱粘着層としたほかは実施例1に準じて靴底掃除シートを得た。

【0022】実施例3

坪量10g/m²で幅約60mmの不織布状の弱粘着層を30mmの間隔を設けて部分的に配置したほかは実施例1に準じて靴底掃除シートを得た。

【0023】比較例

裏面をシリコーン系剥離剤で処理した厚さ40μmの0PPシート上の片面の全面に、SIS100部と石油系樹脂100部の混合物からなる粘着剤溶液をペタ塗してなる厚さ15μmの粘着層を形成して靴底掃除シートを得た。

【0024】評価試験

掃除効果

実施例、比較例で得た靴底掃除シートの上を安全靴にて通常の速度で歩行し、その場合における靴底の掃除効果を下記の基準で目視判定した。

◎:非常に良好 ○:良好

【0025】消音効果

前記の歩行時に、安全靴より100mm離れた位置にマイクを配置して音圧レベルを測定した。なお歩行時のブランク値は50dBであった。

【0026】前記の結果を次表に示した。

| | 実施例1 | 実施例2 | 実施例3 | 比較例 |
|----------|------|------|------|-----|
| 掃除効果 | ○ | ◎ | ○ | ○ |
| 消音効果(dB) | 59 | 56 | 73 | 90 |

【0027】

【発明の効果】本発明によれば、不織布状の弱粘着層を有することによりそのクッション性に基づいて靴底の凹凸に良好に密着して掃除効果に優れると共に、消音効果に優れて不快なバリバリ音が抑制され静寂な環境下に靴底を掃除できるシートを得ることができる。さらに加熱

溶融下に形成した不織布状の弱粘着層の場合には臭気揮散で微臭性にも優れ、不快な臭いを発しにくい利点なども有している。

【図面の簡単な説明】

【図1】実施例の断面図

【図2】他の実施例の断面図

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【図3】製造工程の説明図

【符号の説明】

1: 不織布状の弱粘着層

2: 固定用粘着層

3: 支持シート

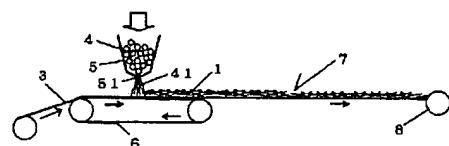
【図1】



【図2】



【図3】



フロントページの続き

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(54) [Title of the Invention]

Shoe Bottom Cleaning Sheet

(57) [Summary]

[Objective]

To obtain the shoe bottom cleaning sheet that does not generate noisy sounds during the time of shoe bottom cleaning and which has an excellent silencing effect.

[Structure]

The shoe bottom cleaning sheet has a **slightly sticky layer (1)** which is comprised of a **unwoven fabric- like accumulated layer of fibers made out of a slightly sticky material** **on one entire or a part of one surface of the supporting sheet (3)**.

(Fig. 1) (Fig. 2)

[Laleh's Note: layer 1 is the slightly sticky layer, and is made of an unwoven fabric-like layer - the tackiness is on the surface that is meant to be contacted by the sole of a persons' shoes]

[Effect]

Based on the cushioning ability of the unwoven fabric-like slightly sticky layer, it tightly attaches to the indents and protrusions on the shoe bottom, and it has an excellent effect of cleaning, and also it exhibits an excellent silencing effect.

[Scope of the Patent Application]

[Claim 1]

Shoe bottom cleaning sheet characterized by the fact that it has a slightly sticky layer comprised of an unwoven fabric-like accumulated layer of fibers made out of a slightly sticky material on one entire surface or a part of one surface of the support sheet .

[Claim 2]

Shoe bottom cleaning sheet in which the slightly sticky layer comprised of the unwoven fabric-like accumulated layer is adhered via a sticky fixing layer, as was described in Claim 1.

[Detailed Explanation of the Invention]

[0001]

[Field of Utilization in Industry]

This invention relates to the shoe bottom cleaning sheet that exhibits an excellent silencing effect.

[0002]

[Existing Technology]

Until now, the shoe bottom cleaning sheet which was made by all over coating of a sticky layer on a support sheet has been known. Such sheet is for cleaning the shoe bottom by transferring the dust, dirt, etc., that was attached to the shoe bottom to the sticky layer side, by just walking on the sheet while wearing shoes.

[0003]

However, in the existing shoe bottom cleaning sheet on which a sticky layer was completely coated, it used to cause an annoying noisy sound such as "bari bari", and this was a problem.

[0004]

The objective of this invention is to obtain the shoe bottom cleaning sheet which does not generate this annoying "bari bari" noise during the time of shoe bottom cleaning and which exhibits an excellent silencing effect.

[0005]

[Method to Achieve the Objective]

This invention offers the shoe bottom cleaning sheet characterized by the fact that it

has a slightly sticky layer comprised of an unwoven fabric-like accumulated layer of fibers made out of a slightly sticky material on one entire surface or a part of one surface of the support sheet.

[0006]

[Action]

The inventors investigated to solve the above mentioned problem, and they discovered that the "bari bari" sound that occurs when the shoe bottom is cleaned by the existing shoe bottom cleaning sheet, is the sound of separating the shoes from the sticky surface, and that this "bari bari" sound can be restricted and the silencing effect is great if an unwoven fabric-like slightly sticky layer is used instead of the existing all over coated sticky layer.

[0007]

In the above description, during the dirt- transfer- cleaning via the sticky layer, the separating action of the sticky surface and the shoe bottom is inevitable, therefore, the fact that this separating sound was greatly reduced when the unwoven fabric-like slightly sticky layer was used, was unexpected, and the silencing mechanism is unclear. When the inventors tried to use a soft type slightly sticky layer in the existing type shoe cleaner in which the sticky layer was coated all over, the sufficient effect of reducing the "bari bari" sound was not exhibited, therefore we think that the source of the silencing effect comes from the fact that the sticky layer was made to be in the form of unwoven fabric.

[0008]

[Actual Examples]

The shoe bottom cleaning sheet of this invention has the slightly sticky layer comprised of the unwoven fabric-like accumulated layer of fibers made out of a slightly sticky material on one entire surface or a part of one surface of the supporting sheet. This

example is shown in Figures 1 and 2. 1 is the unwoven fabric-like slightly sticky layer and 3 is the support sheet. 2 is the fixing sticky layer that is provided, depending on necessity, to fix the unwoven fabric-like slightly sticky layer strongly to the support sheet.

[Laleh's note: layer 2 is an option. It serves to fix the slightly sticky fibrous layer 1 to the support sheet 3.]

[0009]

As is clear in the Actual Examples in Figures 1 and 2, the slightly sticky layer comprised of the unwoven fabric-like accumulated layer of fiber made out of a slightly sticky material, may be provided on the entire area of one surface of the support sheet, or it may be provided on a part of one surface. In the case when the above mentioned slightly sticky layer is partially provided on the support sheet, its configuration, etc., can be determined appropriately.

[Laleh's note: the sticky layer 1 being "partially provided" refers to Fig. 2, where discontinuities are shown on top exposed surface of layer 1. This publication does not further specify how the configuration of the "partially provided" layer 1 can be appropriately determined.]

[0010]

The formation of the unwoven fabric-like slightly sticky layer can be done by any appropriate method, for instance, such as the method in which the slightly sticky material is made into fiber by an appropriate method such as the melt blow method or the curtain spray method, etc., and this is accumulated as the unwoven fabric-like material in the support sheet and a porous slightly sticky layer is formed.

[0011]

Figure 3 shows the above mentioned melt blow method. In this method, the slightly sticky material 4 is stored in the die 5 in the ventilate-able state such as a chip- like form or in granular form, and this slightly sticky material is partially melted by heating via the die, and also hot air is blown in from above the die as is indicated by the arrow, and by this, the melted part of the slightly sticky material is blown out through the die hole 51 in the fiber form 41, and this is spread over the support sheet 3 that is moved in order via the conveyer 6, and thus, the slightly sticky layer 1 made out of the unwoven fabric-like accumulated layer is formed, and the obtained shoe bottom cleaning sheet 7 is wound onto the wind-up roll 8. Here, the separating ability is added by a separating agent, etc., on the reverse side of the support sheet, so that the unwinding of the wound-up body can be done easily.

[0012]

As for the slightly sticky material to be used for forming the slightly sticky layer, an appropriate material that shows a slight stickiness at normal temperatures can be used such as, for instance, a hot melt sticky agent. Generally, a thermoplastic elastomer that can be heat melted can be used. In the melt blow method or the curtain spray method mentioned above, the heat-meltable slight sticky material is spread in fiber form under the heat melted conditions, and by this, the odor evaporates, and the the product can also become good from an odor point of view.

[0013]

Styrene type elastomers such as SIS, SBS, SEBS, SIPS, SEPS or urethane type elastomers, etc., can be listed as examples of the slightly sticky material that can be used preferably. These slightly sticky materials can be used alone or in combinations of 2 or more. In the preparation of the slightly sticky material, if necessary, appropriate additives such as a tackifier, a softening agent, an aging prevention agent, etc., can be blended.

[0014]

The slightly sticky layer that is preferred for balancing the cleaning effect (adhering strength) and the silencing effect, should be such that the average fiber diameter that forms this material should be 500 μm or less, preferably 0.5 to 100 μm , more preferably 1 to 50 μm , and the fiber of this average diameter is accumulated in the unwoven fabric manner at a density of 200 g / m^2 or less, preferably 1 to 100 g / m^2 , especially 2 to 50 g / m^2 . Concerning the determination of the above mentioned average fiber diameter, the unwoven fiber-like slightly sticky layer was photographed randomly with a scanning microscope, and the fiber diameter was examined at 10 random points in these 10 photos, and they were averaged.

[0015]

The sticky layer for fixing which is provided between the slightly sticky layer and the support sheet, depending on necessity, should be an appropriate one that shows good adhering strength for both slightly sticky layer and the support sheet. Preferably it should be the one where a tackifier is co-used with the slightly sticky material that was used for forming the slightly sticky layer, to make the adhesive strength greater than that of the slightly sticky layer. The sticky layer for fixing can be applied all over too. Based on the 180° peel value (peeling rate of 300 mm / min) for stainless steel sheet, the preferred adhering strength of the slightly sticky layer should be 1 to 1000 g / 20 mm, preferably 2 to 500 g / 20 mm, especially preferred is 5 to 300 g / 20 mm.

[Laleh's note: the above paragraph regards layer 2 for fixing. This publication says/suggests nothing about his layer being absorbent. Note also that layer 2 is an option, and is not necessarily provided between layers 1 and 3.]

[0016]

Concerning the formation of shoe bottom cleaning sheet, in addition to the method in which the unwoven fabric-like slightly sticky layer is directly provided on the support

sheet via a sticky fixing layer if necessary, other appropriate methods, for instance, the method in which the unwoven fabric-like slightly sticky layer is formed on a separator, and this is moved onto the support sheet via a sticky fixing layer, if necessary, can be used too.

[0017]

The above mentioned support sheet is not particularly limited, and the one that is the same as that of the prior art can be used. Therefore, any appropriate material that can be worked into a sheet can be used. Preferably, the sheet made out of a poly olefin such as poly ethylene, poly propylene, blend of poly ethylene and poly propylene, or poly vinyl chloride, or unwoven fabric made out of poly amide fibers or poly ester fibers, 3 etc., or felt like sheets, etc., can be used. The thickness of the sheet should be generally 5 mm or less, mostly 1 mm or less, especially 1 to 500 μm is common, but it is not limited to this.

[0018]

The shoe bottom cleaning sheet of this invention can be practically used as the sheet "as is", or by placing it on a mat, etc. Also, the shoe bottom cleaning sheet can be used practically in the layered state as well.

[0019] Example 1

The sticky agent solution comprised of a mixture of 100 parts (weight parts, and this is the same in the following also) of a styrene type elastomer (SIS) and 100 parts of a petroleum type resin, was coated all over one surface of an OPP sheet of which the thickness was 25 μm and of which the reverse side was treated with a silicone peeling agent, and thus a 15 μm thick, sticky layer for fixing was made. 100 parts of SIS and 30 parts of petroleum type resin were kneaded in a kneader at 160 °C, and this kneaded material was made into chips, and these chips were put into the die, a 10 g / m^2 weight of unwoven fabric-like slightly sticky layer was formed on the sticky

layer for fixing by the melt blow method, and thus, the shoe bottom cleaning sheet was obtained.

[0020]

In the above mentioned description, the melt blowing was performed under the conditions of a die temperature of 200 °C, a hot air temperature of 210 °C, a hot air pressure of 1.0 to 2.0 kg / cm², and a conveyer line speed of 3 m / min., and the average fiber diameter in the unwoven fabric-like slightly sticky layer was about 10 µm.

[0021] Example 2

The shoe bottom cleaning sheet was obtained the same as in Example 1 except that the weight of the unwoven fabric-like slightly sticky layer was made to be 30 g / m².

[0023] (There was no [0022], Translator)

Example 3

The shoe bottom cleaning sheet was obtained the same as in Example 1 except that the unwoven fabric-like slightly sticky layer with a weight of 10 g / m² and ~~a width of about 60 mm was arranged partially at 30 mm intervals.~~

[Laleh's note: Example 3 seems to refer to Fig. 2, and suggests that the slightly sticky layer in the example is made of strips that are 60 mm wide and set apart at a distance of 30 mm (width of channels). It would seem that 30 mm channels would not be able to wick/drain water effectively in any event. Is that not correct?]

[0024]

Comparison

A sticky agent solution comprised of the mixture of 100 parts of SIS and 100 parts of a

petroleum type resin, was coated all over on one surface of a 40 µm thick OPP sheet and of which the reverse side was treated with a silicone peeling agent, and thus a 15 µm thick, sticky layer was formed and the shoe bottom cleaning sheet was obtained.

[0025]

Evaluation Tests

Cleaning effect

By walking at normal speed with safety shoes on the shoe bottom cleaning sheets obtained in the Examples and Comparison, the cleaning effect of the shoe bottom was visually evaluated by the following standard.

: Very good

: Good

[0026]

Silencing effect

During the above mentioned walking, a microphone was placed in the position that was 100 mm from the safety shoes, and the sound pressure level was measured. Here, the blank value during walking time was 50 dB.

[0027]

The results are shown in the following table.

| | Example 1 | Example 2 | Example 3 | Comparison |
|-----------------------|------------------------|---|------------------------|------------------------|
| Cleaning effect | <input type="circle"/> | <input type="circle"/> <input type="circle"/> | <input type="circle"/> | <input type="circle"/> |
| Silencing effect (dB) | 59 | 56 | 73 | 90 |

[0028]

[Effect of the invention]

According to this invention, based on the cushioning ability of the unwoven fabric-like

slightly sticky layer, it tightly attaches to the indents and protrusions on the shoe bottom, and it has an excellent effect of cleaning, and also it exhibits an excellent silencing effect, so that the annoying "bari bari" noise is restricted and the sheet that can clean the shoe bottom in a quiet manner can be obtained. In addition, in the case when the unwoven fabric-like slightly sticky layer is formed under heat- melting conditions, the odor problems are greatly reduced due to the odor evaporation, and it is unlikely to cause an uncomfortable odor and this is another advantage.

[Simple Explanation of the Figures]

[Figure 1]

Cross section of an Example.

[Figure 2]

Cross section of another Example.

[Figure 3]

Explanatory figure of the production process.

[Explanation of Marks]

- 1: Unwoven fabric-like slightly sticky layer
- 2: Sticky layer for fixing
- 3: Support sheet

Please refer to the original figures.

[Laleh's note: this publication is silent regarding water. Nothing in the publication suggests that it was meant to be used under wet conditions. In addition, nothing in the reference suggests that layer 1 would keep its tackiness when wet.]